

ADDITIONS TO THE FLORA OF COLORADO—XI

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The tenth number of this series was published in *Phytologia* 55:11-13. 1984. Three-letter family acronyms are used, following Weber (*Taxon* 31:74-88. 1982).

NEW RECORDS FOR COLORADO
(INDIGENOUS TAXA)

ARNICA ALPINA (L.) Olin ssp. TOMENTOSA (Macoun) Maguire, *Madrono* 6:153. 1942 (AST). PITKIN CO.-GUNNISON CO. BORDER: a col 1.5 mi S of Taylor Pass (along ridge to Taylor Peak), 12,650 ft. alt., on windswept bare clay flat with sparse vegetation (Chionophila jamesii), 3 Aug. 1980, 30 Aug. 1984, Katharine I. Matthews 491, 1745. Disjunct from Montana and northward.

CHONDROPHYLLA NUTANS (Bunge) W. A. Weber (GEN). PITKIN-GUNNISON CO. BORDER: ridge south of col, 1.5 mi S of Taylor Pass (along ridge to Taylor Peak), in Kobresia turf, 12,700 ft. alt., 29 Aug. 1984, K. I. Matthews 1744. SUMMIT CO.: tundra, W slope of Hoosier Ridge, 13,000 ft. alt., 31 Aug. 1948, Weber & Thornburg 4453.

Aven Nelson proposed the genus Chondrophylla for two Rocky Mountain species, C. americana and C. fremontii. He felt that the C. prostrata of Eurasia differed from its American counterpart although he did not elaborate. C. americana is now generally recognized to be synonymous with C. prostrata Haenke, and C. fremontii is synonymous with C. aquatica (L.) Weber (Gillett 1963). The genus Ciminalis, which for a time was thought to include these species, is now reserved for a monotypic species of the Alps.

In my Rocky Mountain Flora, ed. 5. 205. 1976, I reported what I considered specific differences between these taxa because in previous editions I had incorrectly synonymized fremontii under prostrata. Mrs. Aven Nelson (in litt.) had argued correctly that the taxa were indeed morphologically and ecologically quite distinct and as I applied closer observation in the field I saw the merit of her case.

Noel Holmgren, in Intermountain Flora, 4:8. 1984, listed my arguments for the distinctions, but concluded, however, "I have not found these characters so well correlated as Weber has suggested, and therefore recognize them as one species."

In the Flora USSR (1967, Vol. 18 [English translation], pp. 420-429), C. prostrata and C. aquatica are placed (sub Gentiana) in Series Prostratae Grossh. and Series Aquaticae Grossh. These differ markedly in the former having the capsule linear-oblong, much longer than broad, and the latter having the capsule obovoid, not more than 4 times as long as broad (in C. aquatica it is "ob-

ovoid-spherical"). I confess I was not aware of this additional distinction but in connection with the addition of C. nutans to the Colorado Flora I became aware of this strong qualitative difference; it can be used to separate C. prostrata and C. nutans, on the one hand (both of which have elongate capsules), from C. aquatica which has very short capsules that open widely to form an open two-lipped cup at maturity.

Holmgren gives a range of capsule length in C. prostrata as 4-7 (14) mm long, which suggests that he had both species and was lumping the variation range. This assumption is proven correct by reference to the plate on page 9 which shows a flowering branch with corolla and open capsule of C. prostrata, elongate and dehiscent only at the apex (no explanation is given as to the parts shown). To the right of this figure is shown a capsule of C. aquatica, with its characteristic obovoid shape and deep dehiscence. Captions indicate the stipe and the capsule. Clearly two taxa should be recognized in the Intermountain Flora.

These observations were made in the course of study of an unusual Chondrophylla discovered by Miss Matthews in her alpine studies in the Elk Mountains of Colorado. This population of plants differed from all other Colorado collections in having extremely long, blackish stipes up to almost 3 cm long, and nodding flowers. This plant clearly belongs to Series Prostrata but differs from C. prostrata in the characters mentioned, the latter having relatively short stipes that barely extend the capsule beyond the flower tube, and strictly erect flowers on relatively shorter stems.

This material belongs to C. nutans (Bunge) Weber, heretofore known only from Asia! I had collected it myself in the type area of the headwaters of the Chuya River in southern Altai in Siberia and fortunately have good matching material in the herbarium. In working over our collections of C. prostrata from Colorado, I discovered another collection that I had made almost forty years ago on Hoosier Ridge. Thus the list of Middle Asiatic disjuncts in Colorado continues to grow.

The treatment of Gillett (1963) is confusing. He described the capsules of both C. prostrata and C. aquatica as being equal in length (1.5 cm), which is not true. His illustration (Fig. 11) is quite incorrect, since it does not distinguish properly between the stipe and the capsule. Actually, only the flared portion is capsule. The habit sketches are reasonably correct, but the small drawing of the opened corolla shows a capsule that is more like that of C. prostrata than of C. aquatica. The illustration (Fig. 10) of C. prostrata is quite correct as to the small plant and the opened corolla, but the larger plant with the long filiform stipe suggests that the artist was looking at C. nutans! Possibly that species is actually more widely distributed in Northwestern North America than we realize.

ERIOGONUM LEPTOCLADON var. LEPTOCLADON T. & G., Pac. RR Rept. 2:129. 1877 (PLG). MESA CO.: Rabbit Valley, between Mack and Utah State line, S of Hwy I-70, Young 204. Fls. yellow.

GALLARDIA SPATHULATA A. Gray, Proc. Amer. Acad. 12:59. 1877 (AST). MESA CO.: Beaver Mesa, above John Brown Canyon, 7,000 ft. alt., Dolores River Canyon, pinon-juniper-sagebrush, 16 June 1982, Young (COLO 401520).

HEUCHERA VERSICOLOR Greene. Lfl. Bot. Obs. Crit. 1:112. 1905 (SAX). LAS ANIMAS CO.: west terminus of Mesa de Maya between Raton Pass and Trinidad; Fisher's Mesa, on vertical face of caprock facing north and east, aspen level, 8 July 1984, John H. Robertson 6. The race represented here is var. *versicolor*. The main area for this species is central and southern New Mexico and Arizona.

MUHLENBERGIA THURBERI (Scribn.) Rydb., Bull. Torr. Bot. Club 32:601. 1905 (POA). DELTA CO.: Escalante Canyon, 20-21 Sept. 1981, Siplivinsky 2520; 1 Sept. 1977, Ratzloff (COLO 318394). MESA CO.: Colorado National Monument, 1 Sept. 1982, Siplivinsky 5087; Unaweap Canyon, 11 July 1981, Siplivinsky 1539.

WOODSIA PLUMMERAE Lemmon, Bot. Gaz. 7:6. 1882 (WDS). LAS ANIMAS CO.: along Purgatoire River, T30S R59W; cliffs at spring, cool N-facing slope of canyon, 5 Sept. 1983, David Cooper (COLO 402549).

NOTEWORTHY RANGE EXTENSIONS OR REDISCOVERIES

BAEOTHRYON PUMILUM (Vahl) Löve & Löve, Univ. Colorado Studies Ser. Biol. 17:14. 1965 (CYP). *Scirpus pumilus* Vahl; *Trichophorum pumilum* Schinz & Thell. PARK CO.: Mosquito Range: Four Mile Creek, 0.5 mi W of Four-Mile Campground, 3200 msm; in saturated moss (*Cratoneuron commutatum*) mat along a small rill entering a *Salix brachycarpa* fen, together with *Kobresia simpliciuscula* and *K. sibirica* (in the depressions) and *K. myosuroides* (dominant on higher ground adjacent), calcareous drainage, 1 Sept. 1984, Weber & Wittmann 17467. While not strictly a new record, the cited collection represents the first time this species has been found since Hall & Harbour collected it, without specified locality, in 1862. One of Colorado's most elusive rarities, known in the contiguous U.S. only from Colorado and Convict Creek in the Californian Sierra Nevada. Otherwise known from Canada and Alaska, one locality in Scandinavia (North Norway), the Alps, Caucasus, Central Asia and Mongolia.

CIRSIIUM HESPERIUM Eastw. (AST). LAS ANIMAS CO.: between Cordova Pass and Cucharas Pass, SW of Spanish Peaks, 11,000ft. alt., along wet rill in opening of spruce-fir forest, 24 Aug. 1985, Weber & Hogan 17534. Previously known only from the San Juan Mts. (Slumgullion Pass area), west of the Continental Divide.

GAURA NEOMEXICANA Woot. ssp. *COLORADENSIS* (Rydb.) Raven & Gregory (ONA). BOULDER CO.: base of outer foothills of Front Range, 1,600 msm, Lee Hill Road just N of Boulder, 22 Sept. 1984,

Weber & Phipps 17471. Only one plant was found despite a thorough canvassing of the area. This tends to be the pattern for this taxon; everywhere it is rare, with only one or two plants seen. In 1985 a search for it in the same area was unsuccessful.

LEPTODACTYLON WATSONII (A. Gray) Rydb. (PLM). LAS ANIMAS CO.: Mesa de Maya; Lizard Head, a promontory at highest point of eastern section of the mesa, NE of Branson, 6,900 ft. alt., T33S R56W SE1/4 Sec. 31, around rocks at the very edge of the promontory, 23 Aug. 1985, Weber & Hogan 17525. Previously known only from a few scattered sites west of the Continental Divide.

PROSOPIS GLANDULOSA Torr., Ann. Lyc. N.Y. 2:192. 1827 (FAB). LAS ANIMAS CO.: Mesa de Maya, in the gap between east and west sections, on Willard Loudon Ranch (20,000 acres) NW of Branson, 5,500-6,000 ft. alt., Sec.9, T35S R55W, Cobert Mesa North Quadr. (1972); N-facing slope of Philips (Hardesty) Canyon between Kelly and Nestor branches, 23 Aug. 1985, Weber & Hogan 17516. Two shrubs, originally 2 m tall, badly winterkilled, with new growth only 1 m tall. Known to the Loudon family from the time of the original homestead (1901-02). This is the northernmost locality known for the species, and the first herbarium record for Colorado since Greene collected it "in mountains between the Purgatory and Apishapa, 30 mi N of the state line", on Jan. 21, 1880.

ADVENTIVE TAXA

CAMPISIS RADICANS (L.) Seem. (BIG). MESA CO.: established along fencerows, Grand Junction, Young 200.

CHRYSANTHEMUM COCCINEUM Willd. (AST). PITKIN CO.: Norrie Colony E of Meredith, 8,500 ft. alt., meadows and forest margins near Fryingpan River, 3 Aug. 1984, Reid (COLO 400842).

HELIANTHUS TUBEROSUS L. (AST). MESA CO.: established along irrigation ditches, Grand Junction, Young 219.

HIERACIUM AURANTIACUM L. (AST). PITKIN CO.: Norrie Colony E of Meredith, 8590 ft. alt., meadows and forest margins near Fryingpan River, 3 Aug. 1984, Reid (COLO 400821).

MACLURA POMIFERA (Raf.) C. K. Schneider (MOR). MESA CO.: established and becoming a pest along fencerows, River Road, Grand Junction, Young 214.

MORUS ALBA L. (MOR). MESA CO.: established along fencerows, ditches and seeps, Grand Junction, Young 218.

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